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## Measuring Material Deprivation in the Enlarged EU

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*Abstract.* This paper uses new data from EU-SILC for twenty-six European countries to examine the structure and distribution of material deprivation in the enlarged EU. We identify three distinct dimensions of material deprivation relating to consumption, household facilities and neighbourhood environment, and construct indices of these dimensions for each country and the EU as a whole. The extent of variation across countries and welfare regimes is shown to depend on the dimension on which one focuses, as does the strength of the association with household income and subjective economic stress. The index of consumption deprivation has by far the highest correlation with income, provides a highly reliable measure in itself, and allows segments of the population to be identified that are sharply differentiated in terms of their multi-dimensional deprivation profiles. On the basis of this evidence we make some suggestions as to the manner in which the measurement of material deprivation in the European Union should be developed through the proposed special module of deprivation which will form part of the 2009 wave of EU-SILC.

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# Measuring Material Deprivation in the Enlarged EU

## Introduction

Building on pioneering research by Townsend (1979) and Mack and Lansley (1985), measures of material deprivation are now widely used in studying, understanding and monitoring poverty and social exclusion in industrialised countries. In a UK context, this includes for example research based on the Poverty and Social Exclusion surveys (e.g. Gordon *et al*, 2000) and that employed in framing measures of child poverty (DWP, 2002, 2007). In 2000 the EU's Social Inclusion process adopted a battery of social inclusion indicators (commonly known as the "Laeken Indicators") that currently rely heavily on household income, but with a commitment to develop complementary indicators of deprivation. With the termination of the European Community Household Panel (ECHP) the European Union Community Statistics on Income and Living Conditions (EU-SILC) instrument is potentially the primary source for such analysis. It is from this source that the common statistical indicators endorsed by the European Laeken Council in 2001, and later refined by the Social Protection Committee to serve as an essential element in the Open Method of Coordination related to the Social Inclusion Process, will be drawn. Data from the EU-SILC organised by Eurostat are now available for most of the EU member states, and here we use this to examine the structure, distribution and consequences of material deprivation at national and EU levels. This also serves to demonstrate that deprivation indices can be constructed that are satisfactory at both national and European levels, and can serve as additions to the existing portfolio of social indicators. In our conclusion we consider how analysis of the deprivation indicators currently included in EU-SILC can inform future developments in this area particularly through the special module on deprivation being developed by Eurostat which will form part of the 2009 wave of EU-SILC.

The current interest in indicators of material deprivation is related to increasing dissatisfaction, in an EU context and within many countries, with the common approach of focusing on those falling below relative income poverty lines. It has long been argued that poverty is about 'more than just money', and recent years have seen

an increasing emphasis on multidimensionality – although often on a rather *ad hoc* basis.<sup>1</sup>

Following Townsend (1979), the European Union has conceived poverty as involving exclusion from the minimally acceptable way of life of the Member state in which one lives as a consequence of inadequate resources (Atkinson *et al*, 2002). Those below relative income thresholds, falling more than a certain ‘distance’ below the average, could indeed be excluded as a consequence from the minimally acceptable way of life. However, in practice low income turns out to be quite unreliable in identifying households experiencing distinctive levels of deprivation (Ringén, 1988). Recognition of this fact contributed to the labelling of those below relative income thresholds in the current EU indicators as being ‘at risk of poverty’, whereas previously they had been simply termed “poor”.

The various factors contributing to the weakness of the measured relationship between income and deprivation are becoming better understood. They include the fact that current income is an imperfect indicator of long-term or ‘permanent’ income, that needs to differ across households in a manner that is difficult to capture in “equivalence scales”, and that not only income but support from family, friends and neighbours, non-cash income from public provision of services, and geographical location all affect living standards.<sup>2</sup> The growing literature on multi-dimensional analysis of social exclusion shows that different methods lead to different conclusions about not only levels of poverty or exclusion, but also the groups or types of household that are identified as excluded.<sup>3</sup> Rather than serving as a counsel of despair, though, the lesson can be drawn that direct measures of material deprivation,

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<sup>1</sup> Alternative conceptual and empirical rationales for adopting such an approach are discussed in Nolan and Whelan (2007)

<sup>2</sup> Extending to observation period from one to five years, while providing improved measures of both income and deprivation, does not resolve the problem of limited overlap. See Whelan *et al* (2001, 2004).

<sup>3</sup> See Mack and Lansley (1985), Gordon *et al* (2000), Bradshaw and Finch (2003), Hallerod (1995), Kangas and Ritakallio (1998), Tsakloglou and Papadopoulos (1998), Short (2005), Whelan *et al* (2001) and Perry (2002).

seen as a complement rather than an alternative to income measurement, have a valuable role to play in understanding poverty and framing and monitoring policy.<sup>4</sup>

## **Measurement of Deprivation in the European Union**

The current set of common EU-indicators of poverty and social exclusion used in the context of the Open Method of Coordination (OMC) relies heavily on measures of relative income poverty. The emphasis on a purely relative perspective, taking conditions in one's own country as the benchmark, has been justified by the European Commission in the following terms:

“An absolute notion is considered less relevant for the EU for two basic reasons. First the challenge for Europe is to make the whole population share the benefits of high average prosperity and not to reach basic standards of living as in developed parts of the world. Secondly, what is regarded as minimal acceptable living standards depends largely on the general level of social and economic development, which tend to vary considerably across countries (European Commission, 2004).

Nevertheless, as Guio (2005) observes, particular concern has been expressed about the ability of the current portfolio of indicators to satisfactorily reflect the situation of the New Member States and facilitate meaningful comparison between them and the ‘old’ Member States. As Fahey (2007) notes, relative poverty thresholds in the more affluent member states are above average income in the poorest member states, and the ‘poor’ in some countries have higher standards of living than the well-off in others. The problems are reflected in the strikingly different pictures provided by comparisons involving on the one hand ‘at risk of poverty’ indicators and, for example, average GDP.

One response to such concerns has been to explore the income poverty patterns that would result from adopting either sub-national or EU-level thresholds.<sup>5</sup> An alternative approach has been focused on the development and use of material deprivation

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<sup>4</sup> Boarini and d’Ercole (2006:12) suggest that this dual approach is consistent with Sen’s (2000) argument that a comprehensive approach should encompass a focus on individuals’ command over resources – capabilities – and the resulting outcomes – functionings.

<sup>5</sup> Kangas and Ritakallio (2007) and Brandolini (2007)

indicators. The EU is committed to developing such indicators to form part of its portfolio for the purposes of the social inclusion process, and to facilitate this a special module relating to material deprivation is to be included in the 2009 round of EU-SILC.<sup>6</sup> However, in the meantime significant progress can be made by analysing the indicators already included in the core EU-SILC each year, and that is what we undertake here.

The deprivation items that have been included in the ECHP and EU-SILC have largely related to the enforced lack of a combination of items depicting material living conditions, such as capacity to afford basic requirements, possession of consumer durables, household conditions and quality of neighbourhood environment. Guio (2005) stresses that the indicators do not involve a comprehensive coverage of social exclusion since they ignore access to the labour market, education, health and social participation. They are simply intended to offer synthetic information on material living conditions. However, this is not necessarily a disadvantage. All-embracing definitions of social exclusions that conflate disparate dimensions often obscure rather than clarify the underlying processes of exclusion.<sup>7</sup>

Here we report the findings of an analysis of material deprivation using EU-SILC 2005. The data available for analysis covers twenty-six countries, 24 EU member states plus Norway and Iceland. The analysis will be conducted at the household level. Taking into account previous literature in the area of material deprivation, our objectives are as follows:

To propose and test a dimensional structure for the analysis of material deprivation using EU-SILC.

To consider the levels of reliability associated with the dimensions proposed at national, welfare regime and EU levels.

To examine the extent to which deprivation dimensions are independent or correlated.

To assess the adequacy of measurement relating to the dimensions we identify and the possible need to develop additional dimensions.

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<sup>6</sup> See also the OECD review by Boarini and D'Ercole (2006).

<sup>7</sup> Previous research suggests rather weak associations between the measures developed and social isolation and somewhat stronger correlations with health outcomes (see respectively See Gallie *et al.* (2003), Achenson (1998)).

To document national and welfare regime variation in relation to deprivation dimensions and certain single indicators that we identify as of particular interest.

To ask to what extent the particular form of deprivation that we label 'consumption deprivation' also captures exposure to deprivation more broadly.

To consider the relationship between different forms of deprivation, household income, and subjective economic stress.

## **Deprivation Items**

Our analysis focuses on 17 deprivation items:

- Afford to pay unexpected required expenses.
- Weeks holiday away from home.
- Meals with meat, chicken, fish (or vegetarian)
- Can afford a PC?
- Arrears relating to mortgage payments, rent, utility bills, hire purchase.
- Inability to keep home adequately warm.
- Respondent for household can afford to have a car.
- Bath or shower in dwelling.
- Indoor toilet.
- Can afford a telephone?
- Can afford a colour TV?
- Can afford a washing machine?
- Pollution, grime or other environmental problems in the area caused by traffic or industry.
- Noise from neighbours or noise from the street.
- Crime, violence or vandalism in the area.
- Rooms too dark, light problems.
- Leaking roof, damp walls/ceilings/floors/foundations, rot in doors, window frames.

## Analysing the Structure of Multiple Deprivation

Exploratory factor analysis led us to hypothesise that the underlying structure of deprivation could be best conceptualised in terms of three distinct but correlated dimensions:

- *Consumption deprivation* comprising seven items load ranging from ones that deal with current requirement such as food and heat to more general consumption items such as being able to afford a holiday, a car or a PC, as well as avoiding arrears on regular bills such as rent or utilities.
- *Household facilities* comprising five items that relate to permanent household facilities such as bath or shower and indoor toilet, and also includes being able to afford a telephone, a colour TV and a washing machine.
- *Neighbourhood environment* comprising three items relating to noise, pollution, crime and violence.

This preliminary analysis also suggested that the items relating to ‘insufficient light’ and ‘leaking roof’ do not seem to be associated with any distinct cluster of items; we therefore do not include either in the dimensions to be analysed (though we do employ the “leaking roof” item on its own to capture poor housing quality at a later stage in the analysis).

Table 1 reports the results of a confirmatory factor analysis for dichotomous items with these three factors.<sup>8</sup> The loadings on the first dimension range from 0.8-0.9 for the holidays, inability to cope with unexpected expenses, and meal with meat fish or chicken items, about 0.7 for inability to keep the home warm and a PC, and the lowest value of about 0.6 is observed for arrears. On the household facilities dimension the bath or shower and indoor toilet items occupy the most prominent position, with loadings of close to 1, while for telephone, washing machine and TV the coefficients are about 0.8. Finally, on the neighbourhood environment dimension both noise and pollution load at a level close to 0.8 while the crime, violence or vandalism coefficient is somewhat lower at below 0.6.

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<sup>8</sup> Models were fitted using the M-Plus software.

Table 2 reports three measures of goodness of fit for this model. The RMSEA has a value of 0.035 – on this measure values of 0.1, 0.05 and 0.01 indicate a good, very good fit and outstanding fit respectively, so this indicates a very good fit. The Comparative Fit Index (CFI) and the Non-normed Fit Index (NNFI) show values of 0.983 and 0.985 respectively, where values above 0.9 imply a good fit.<sup>9</sup>

| <i>Table 1: Confirmatory Factor Analysis for EU-SILC 2005 Deprivation Items: Standardised Model Results</i> |             |                      |                           |
|---|-------------|----------------------|---------------------------|
|   | Consumption | Household Facilities | Neighbourhood Environment |
| Weeks holiday away from home  | 0.885       |                      |                           |
| Afford to pay unexpected required expenses  | 0.841       |                      |                           |
| Meals with meat, chicken, fish (or vegetarian)  | 0.802       |                      |                           |
| Respondent for household can afford to have a car   | 0.705       |                      |                           |
| Inability to keep home adequately warm  | 0.695       |                      |                           |
| Afford a PC?  | 0.691       |                      |                           |
| Arrears relating to mortgage payments, rent, utility bills, hire purchase                                   | 0.570       |                      |                           |
|   |             |                      |                           |
|   |             |                      |                           |
| Bath or shower in dwelling  |             | 0.983                |                           |
| Indoor toilet   |             | 0.971                |                           |
| Can afford a telephone  |             | 0.839                |                           |
| Can afford a washing machine?   |             | 0.765                |                           |
| Can afford a colour TV?   |             | 0.761                |                           |
|   |             |                      |                           |
| Noise from neighbours or noise from the street  |             |                      | 0.804                     |
| Pollution, grime or other environmental problems in the area caused by traffic or industry                  |             |                      | 0.793                     |
| Crime, violence or vandalism in the area  |             |                      | 0.551                     |

<sup>9</sup> The RSMEA is a based on analysis of residuals. The CFI is based on the non central  $X^2$  and is given by  $(X^2 \text{ model} - df \text{ model}) / (X^2 \text{ independence} - df \text{ independence})$ . The NNFI is given by  $((X^2/df \text{ null model}) - (X^2/df \text{ model}) / ((X^2/df \text{ null model}) - 1))$  (Kelloway, 1998).



Table 2: *Goodness of Fit Results for EU-SILC 2005 Deprivation Dimensions*

| <i>Goodness of Fit Measure</i>                  | <i>Value</i> |
|---|--------------|
| Root mean Square Error of Approximation (RMSEA) | 0.035        |
| Comparative Fit Index (CFI)                     | 0.983        |
| Non-normal Fit Index (NNFI)                     | 0.985        |

Before going on to employ this structure, it is important to note that alternative formulations seeking to distinguish “basic” from “secondary” deprivation, a distinct dimension relating to poor quality housing, and somewhat different groupings of items have been employed in recent work for Eurostat (notably Guio and Macquet, 2007) and in our own earlier analyses of deprivation in the pre-enlargement EU based on the ECHP (e.g. Whelan et al, 2001). The deprivation items currently included in EU-SILC are more limited than was the case with the ECHP, and the inclusion in the 2009 round of EU-SILC of a special module on material deprivation with a broader range of items will allow these issues to be pursued more satisfactorily. In the meantime, the structure outlined here can serve to demonstrate what can be learned about patterns of deprivation across the enlarged EU.

To underpin the appropriateness of undertaking cross-national analysis involving these dimensions of deprivation, Table 3 sets out the value of Cronbach’s alpha reliability index<sup>10</sup> across all twenty-six countries on which the data were available, for the 24 EU Member States taken as a whole, for each individual country, and for five welfare regime clusters. These welfare regimes correspond to the conventional categorisation as follows:

The Social Democratic regime assigns the welfare state a substantial redistributive role, seeking to guarantee adequate economic resources independently of market or familial reliance. We have included Sweden, Denmark, Iceland, Finland, Norway and Netherlands in this cluster.<sup>11</sup>

<sup>10</sup>  $\alpha = [Np / (1 + p(N-1))]$  where N is equal to the number of items and p is equal to the mean inter-item correlation

<sup>11</sup> The proper allocation of the Netherlands is a matter for debate. We follow Aiginger and Guger (2006) and Muffels and Fouarge (2004) in locating it in the social democratic cluster.

The Corporatist regime involves less emphasis on redistribution and views welfare primarily as a mediator of group-based mutual aid and risk pooling, with rights to benefits depending on being already inserted in the labour market. This cluster includes Germany, Austria, Belgium, France and Luxembourg.

The liberal regime acknowledges the primacy of the market and confines the state to a residual welfare role, social benefits typically being subject to a means test and targeted on those failing in the market. The UK and Ireland constitute this group.

The Southern European regime with family support systems playing a crucial role and the benefit system being uneven and minimalist in nature. This group comprises Cyprus, Greece, Italy, Portugal, and Spain.

The Post-communist group: while Alber *et al* (2007) and Juhász (2006) note the difficulties in categorising the welfare regimes of these countries and the extent of variation across them, low levels of spending on social protection and weakness of social rights are common.<sup>12</sup> The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovenia and Slovakia are included in this cluster.

Focusing first on the consumption deprivation dimension, we find that at overall and EU-level the alpha value is 0.74. Relatively little variation is observed across welfare regimes, where alpha ranges from 0.65 to 0.31. Across countries, the lowest value of 0.55 is observed for Iceland and the highest of 0.74 for Belgium and Ireland. The consumption deprivation dimension thus appears to be a reliable measure both within and between countries.

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<sup>12</sup> A number of authors including Bukodi and Róbert (2007) have distinguished Estonia, Latvia and Lithuania as a distinct liberal rather than conservative Post-communist cluster. However, introducing this distinction produces little in the way of extra explanatory power in our analysis.

*Table 3: Cross National and Welfare Regime Variation in Reliability Levels for Deprivation Dimensions*

|                          | Consumption | Household Facilities | Neighbourhood Environment |
|--------------------------|-------------|----------------------|---------------------------|
| <i>Social Democratic</i> | .65         | .29                  | .47                       |
| Sweden                   | .62         | .14                  | .43                       |
| Norway                   | .69         | .21                  | .50                       |
| Denmark                  | .62         | .11                  | .42                       |
| Netherlands              | .65         | .05                  | .56                       |
| Iceland                  | .55         | .19                  | .30                       |
| Finland                  | .67         | .37                  | .48                       |
|                          |             |                      |                           |
| <i>Liberal</i>           | .71         | .41                  | .51                       |
| UK                       | .70         | .22                  | .46                       |
| Ireland                  | .74         | .54                  | .58                       |
|                          |             |                      |                           |
| <i>Corporatist</i>       | .69         | .43                  | .56                       |
| Luxembourg               | .66         | .69                  | .61                       |
| Austria                  | .65         | .47                  | .50                       |
| Belgium                  | .74         | .52                  | .50                       |
| France                   | .70         | .46                  | .53                       |
| Germany                  | .69         | .26                  | .61                       |
|                          |             |                      |                           |
| <i>Southern European</i> | .68         | .60                  | .59                       |
| Spain                    | .61         | .47                  | .54                       |
| Italy                    | .72         | .50                  | .63                       |
| Portugal                 | .65         | .72                  | .58                       |
| Cyprus                   | .66         | .56                  | .73                       |
| Greece                   | .69         | .55                  | .63                       |
|                          |             |                      |                           |
| <i>Post-communist</i>    | .73         | .69                  | .58                       |
| Slovenia                 | .66         | .67                  | .58                       |
| Czech Republic           | .66         | .56                  | .60                       |
| Estonia                  | .67         | .59                  | .50                       |
| Hungary                  | .70         | .69                  | .57                       |
| Slovakia                 | .65         | .61                  | .57                       |
| Poland                   | .72         | .69                  | .62                       |
| Latvia                   | .71         | .67                  | .56                       |
| Lithuania                | .68         | .70                  | .57                       |
|                          |             |                      |                           |
| EU                       | .74         | .66                  | .56                       |
| 26 Countries             | .74         | .66                  | .56                       |

For the household facilities dimension, the overall and EU reliability level are slightly lower at 0.66 but remain highly satisfactory. However, in this case reliability is a good deal more variable across welfare regimes and countries. The highest value of 0.69 is observed for the Post-communist cluster, declining to 0.60 for the Southern European cluster, 0.43 and 0.41 for the Corporatist and Liberal regimes, and 0.29 for the Social Democratic regime. This final cluster has a consistently low set of values, above 0.20 only for Norway. Within the liberal group the UK has a particularly low value of 0.22. The values within the corporatist group range from 0.69 for Luxembourg to 0.26 for Germany. Variation is less pronounced within the Southern European group, four of the five are around 0.5 with Portugal the outlier at 0.7. Variation is also restricted in the Post-communist group with five of the eight countries around 0.7. This is directly related to corresponding variation in levels of deprivation in the underlying items, with levels of deprivation on a number of the household facilities items so low in more affluent countries/clusters that there is little variation.

Turning to the neighbourhood environment dimension, given that it is made up of only three items it is unsurprising that the overall level of reliability declines to 0.56. However, as with consumption deprivation, there is rather modest variation across welfare regimes and countries. The level of reliability ranges from 0.47 for the Social Democratic regime to 0.51 for the Liberal cluster and between 0.56 and 0.59 for the remaining clusters. While the full range of variation across countries runs from 0.30 in Iceland to 0.73 for Cyprus, eighteen of the twenty-six values are located between 0.50 and 0.62. Thus while the inclusion of additional items would be desirable in order to increase its level of reliability, the neighbourhood environment dimension proves to be relatively unproblematic.

Table 4 shows the correlations between the deprivation dimensions. The highest correlation is between the consumption and household facilities dimensions, at about 0.35; consumption and neighbourhood environment are only modestly correlated at about 0.1, while there is essentially no association between household facilities and neighbourhood environment. The table also shows the correlation between each dimension and the level of household income, “equivalised” to adjust for differences in household size and also adjusted to take account of differences in purchasing power across countries. Consumption deprivation is seen to be strongly associated with

income with a correlation of -0.539, whereas this declines to -0.330 for household facilities and to -0.005 for neighbourhood environment.

*Table 4: Correlations Matrix for EU Prevalence Weighted Deprivation Dimensions*

|                              | Consumption | Household Facilities | Neighbourhood Environment | Log of PPS Equivalent Income |
|------------------------------|-------------|----------------------|---------------------------|------------------------------|
| Consumption                  |             |                      |                           |                              |
| Household Facilities         | .349        |                      |                           |                              |
| Neighbourhood Environment    | .093        | -.005                |                           |                              |
| Log of PPS Equivalent Income | -.539       | -.330                | -.005                     |                              |

### **Cross-National Variation in Levels of Deprivation**

We now look at the variation across countries and clusters in deprivation on the three dimensions. The deprivation variables for this purpose are constructed by weighting each individual item by the proportion of households possessing that item across all the countries. Enforced lack of an item that is widely available/possessed across the EU is thus given more weight than deprivation of a less-widely available one - deprivation of an item such as a PC will be counted equally across the member states irrespective of their average living standards, from Estonia at one end of the average income scale to Luxembourg at the other. Scores are standardized to range between 0 and 1 by dividing the sum of the weighted deficits on all items by the sum of EU possession levels.

Focusing first on consumption deprivation, we see that the mean score varies from 0.092 for the Social Democratic regime, 0.108 for the Liberal countries, 0.135 for the Corporatist group, 0.153 for the Southern European countries, and then more than doubles to 0.333 for the Post-communist cluster. Within cluster, variation is relatively modest and consistent with expectations. Luxembourg displays the lowest level in the Social Democratic group, Italy and Spain in the Southern European cluster and Slovenia and the Czech Republic in the Post Communist Group. Cross country variation accounts for about 20 per cent of the variance.

In the case of household facilities, cross-country variance accounts for 12 per cent of the total variance. The major contrast is now between the Post-communist cluster - with mean deprivation level of 0.058 - and all the others, where it is 0.011 or below. The highest levels within the Post-communist cluster are found for Estonia, Latvia and Lithuania, and within the Southern European group for Greece and Portugal.

Turning to neighbourhood environment, there is substantially less variation across countries, accounting for only 2 per cent of total variance. The lowest mean level of 0.158 is observed for the Social Democratic regime, for the Liberal group the mean is 0.217, for the Corporatist group 0.193 and for the Southern European group 0.203 and for the communist cluster 0.169. The full range of national variation runs from 0.084 in Iceland to 0.224 in Latvia.

Looking at the individual household item relating to a 'leaking roof', which was not included in any of the dimensions for the reasons outlined earlier but may tap poor housing quality, we also find clear patterns. In the Social Democratic countries 10.7 per cent report such difficulties with the levels rising to 18 per cent in Iceland and The Netherlands but not exceeding 8 per cent in any other case. For the Liberal and Corporatist countries 13.4 per cent report the problem, with relatively little variation within the regime. This rises to 20.8 per cent for the Southern European countries, with a distinctively high level of 35.8 per cent being found for Cyprus. A further sharp increase to 33.7 per cent is then observed for the Post-communist countries. Within this group Slovakia has an extremely low value of 7.3 per cent. Slovenia and the Czech Republic have below average levels of about 20 per cent. For Estonia it rises to 26 per cent and the remaining countries are found in the range running from 31 to 43 per cent. This suggests that a set of items designed to capture housing deterioration – rather than the single item currently available - would highlight the particularly disadvantaged situation of the Southern European countries and, most particularly, the Post-communist group.

*Table 5: Mean Deprivation Levels for EU Prevalence Weighted Deprivation Dimensions and Percentages Experiencing Housing Deterioration by Welfare Regime*

|                          | Consumption | Household Facilities | Neighbourhood Environment | <i>Housing Deterioration</i> |
|--------------------------|-------------|----------------------|---------------------------|------------------------------|
|                          | <i>Mean</i> |                      |                           | <i>% Roof Leaking</i>        |
| <i>Social Democratic</i> | 0.092       | .005                 | .158                      | 10.7                         |
| Sweden                   | 0.072       | 0.006                | 0.090                     | 5.1                          |
| Norway                   | 0.087       | 0.006                | 0.089                     | 8.3                          |
| Denmark                  | 0.096       | 0.009                | 0.134                     | 7.8                          |
| Netherlands              | 0.097       | 0.008                | 0.223                     | 17.7                         |
| Iceland                  | 0.114       | 0.008                | 0.084                     | 17.9                         |
| Finland                  | 0.128       | 0.015                | 0.168                     | 4.9                          |
|                          |             |                      |                           |                              |
| <i>Liberal</i>           | 0.108       | 0.006                | 0.217                     | 13.4                         |
| UK                       | 0.108       | 0.005                | 0.223                     | 13.5                         |
| Ireland                  | 0.112       | 0.001                | 0.114                     | 13.0                         |
|                          |             |                      |                           |                              |
| <i>Corporatist</i>       | 0.135       | 0.011                | 0.193                     | 13.5                         |
| Luxembourg               | 0.057       | 0.004                | 0.199                     | 14.1                         |
| Austria                  | 0.098       | 0.001                | 0.152                     | 9.7                          |
| Belgium                  | 0.128       | 0.017                | 0.193                     | 14.8                         |
| France                   | 0.135       | 0.012                | 0.184                     | 12.2                         |
| Germany                  | 0.140       | 0.009                | 0.202                     | 14.5                         |
|                          |             |                      |                           |                              |
| <i>Southern European</i> | 0.153       | 0.011                | 0.203                     | 20.8                         |
| Spain                    | 0.134       | 0.005                | 0.212                     | 17.3                         |
| Italy                    | 0.139       | 0.009                | 0.204                     | 22.7                         |
| Portugal                 | 0.219       | 0.039                | 0.201                     | 21.5                         |
| Cyprus                   | 0.228       | 0.014                | 0.202                     | 35.8                         |
| Greece                   | 0.238       | 0.021                | 0.158                     | 21.4                         |
|                          |             |                      |                           |                              |
|                          |             |                      |                           |                              |
| <i>Post-communist</i>    | 0.333       | 0.058                | .169                      | 33.7                         |
| Slovenia                 | 0.153       | 0.019                | 0.177                     | 19.5                         |
| Czech Republic           | 0.206       | 0.017                | 0.190                     | 19.9                         |
| Estonia                  | 0.254       | 0.113                | 0.214                     | 25.6                         |
| Hungary                  | 0.304       | 0.050                | 0.176                     | 34.3                         |
| Slovakia                 | 0.328       | 0.022                | 0.168                     | 7.3                          |
| Lithuania                | 0.377       | 0.159                | 0.139                     | 30.7                         |
| Poland                   | 0.382       | 0.062                | 0.158                     | 42.5                         |
| Latvia                   | 0.431       | 0.149                | 0.224                     | 38.0                         |
|                          |             |                      |                           |                              |
| Country Eta <sup>2</sup> | 0.195       | 0.120                | .019                      |                              |
| Cluster Eta <sup>2</sup> | 0.116       | 0.068                | .004                      |                              |

While the strength of cross- country or cluster variation differs across dimensions and indicators, a clear pattern emerges whereby the Social Democratic regime is characterised by a multi-dimensional profile that is consistently favourable, while equally the Post-communist group are consistently disadvantaged, except in relation to neighbourhood environment. The Southern European group are the next most disadvantaged, occupying a position intermediate to the Corporatist and Post-communist clusters in relation to most outcomes; household facilities being the exception. The liberal group enjoy advantages over the Corporatist regime in relation to consumption deprivation and household facilities, but not with regard to neighbourhood environment and the housing deterioration item.

### **Capturing Generalised and Restricted Forms of Deprivation**

Having provided a detailed descriptive account of deprivation across the different dimensions, we now focus on the relationships between them. We are particularly interested in the extent to which different types of deprivation go together – if they were very strongly related, for example, then knowing that a household was experiencing deprivation in one dimension might suffice to identify those experiencing social exclusion understood as multifaceted deprivation.<sup>13</sup> The most obvious place to focus in that context is on the consumption deprivation dimension and how it relates to the other dimensions. To investigate this, Table 6 categorises households by the number of items they lack on this dimension, and shows how they fare on the remaining deprivation dimensions and indicators, broken down by welfare regime. The strategy we pursue is similar to that employed by McKay and Collard (2003) in developing deprivation indicators for the UK Family Resources Survey. While recognising the value for many purposes of the availability of measures of a range of deprivation dimensions, we seek to demonstrate that it may not always be necessary to have a large suite of questions if a smaller set exhibit comparable discriminatory power.

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<sup>13</sup> Such a measurement perspective can also be used to justify combining income with selected deprivation items in a “consistent poverty” measure such as that developed and applied in Ireland – see for example Whelan (2007).



Across the whole sample about half report some enforced deprivation of consumption indicators, and we see that the level of household facilities deprivation rises gradually from 0.003 for those households reporting no consumption deprivation up to 0.083 for those with a score of four or more on the consumption index. Similarly, the score on the neighbourhood deprivation dimension goes from 0.150 to 0.216 as the level of consumption deprivation increases. The percentage reporting problems in relation to a leaking roof is only 10 per cent among those lacking no consumption items, but gradually rises to 42 per cent for those with consumption deprivation scores of four or more. So the consumption deprivation index does allow us to identify segments of the population that are also sharply differentiated in terms of their multi-dimensional deprivation profiles.

Table 6 also shows that this is the case not just for the sample as a whole but also within each of the five welfare regimes. In the Social Democratic regime 63% have scores of zero on the consumption deprivation index, and only 4% have scores of 4 or more. However, as the level of consumption deprivation increase, the mean household facilities deprivation score rises from 0.001 to 0.038, the mean neighbourhood environment deprivation goes from 0.135 to 0.273 and the level of housing deterioration goes from 8.3 to 20.6 per cent.

The relationship is just as strong for the other welfare regimes, as illustrated by the Post-communist cluster. Only one in five households there have scores of zero on the consumption deprivation index, while three out of ten have scores of four or more. As we look across these groups, mean household facilities deprivation rises from 0.007 to 0.123; for neighbourhood environment deprivation the level goes from 0.148 to 0.189, and for housing deterioration it increases from 15.4 per cent to 51.8 per cent. Thus, while comprising a modest number of indicators, the distribution of consumption deprivation varies sharply across welfare regimes and, both at overall EU-level and within each regime, it successfully identifies segments of the population that are sharply distinctive in terms of their multidimensional deprivation profiles.

| <i>Table 6: Multiple Deprivation Patterns by Consumption Deprivation by Welfare Regime</i> |                         |                              |                       |  |
|--|-------------------------|------------------------------|-----------------------|--|
|  | Household<br>Facilities | Neighbourhood<br>Environment | Housing Deterioration |  |
|  | Mean                    | Mean                         | % Leaking Roof        |  |
| <i>Social Democratic</i>   |                         |                              |                       |  |
| Consumption<br>Deprivation   |                         |                              |                       |  |
| 0 (63.1%)  | .001                    | .135                         | 8.3                   |  |
| 1 (17.7%)  | .004                    | .171                         | 12.7                  |  |
| 2 (9.8%)   | .010                    | .209                         | 15.3                  |  |
| 3 (5.5%)   | .018                    | .233                         | 18.1                  |  |
| 4+ (3.9%)  | .038                    | .273                         | 20.6                  |  |
|  |                         |                              |                       |  |
| <i>Liberal</i>   |                         |                              |                       |  |
| 0 (61.4%)  | .002                    | .192                         | 8.8                   |  |
| 1 (14.3%)  | .005                    | .233                         | 14.5                  |  |
| 2 (11.1%)  | .010                    | .258                         | 18.4                  |  |
| 3 (7.4%)   | .011                    | .264                         | 26.3                  |  |
| 4+ (5.8%)  | .027                    | .313                         | 34.6                  |  |
|  |                         |                              |                       |  |
| <i>Corporatist</i>   |                         |                              |                       |  |
| 0 (53.7%)  | .003                    | .159                         | 9.0                   |  |
| 1 (16.9%)  | .008                    | .199                         | 12.9                  |  |
| 2 (13.3%)  | .014                    | .217                         | 17.2                  |  |
| 3 (8.2%)   | .0199                   | .260                         | 23.3                  |  |
| 4+ (7.8%)  | .054                    | .301                         | 29.7                  |  |
|  |                         |                              |                       |  |
| <i>Southern<br/>European</i>   |                         |                              |                       |  |
| 0 (45.9%)  | .001                    | .188                         | 12.8                  |  |
| 1 (20.0%)  | .004                    | .193                         | 20.3                  |  |
| 2 (16.5%)  | .012                    | .201                         | 25.6                  |  |
| 3 (9.5%)   | .027                    | .224                         | 33.2                  |  |
| 4+ (9.1%)  | .066                    | .276                         | 43.6                  |  |
|  |                         |                              |                       |  |
| <i>Post-communist</i>  |                         |                              |                       |  |
| 0 (20.8%)  | .007                    | .148                         | 15.4                  |  |
| 1 (15.0%)  | .021                    | .156                         | 22.2                  |  |
| 2 (16.9%)  | .036                    | .164                         | 30.5                  |  |
| 3 (15.9%)  | .057                    | .176                         | 36.9                  |  |
| 4+ (31.5%)   | .123                    | .189                         | 51.8                  |  |
|  |                         |                              |                       |  |
| EU-24  |                         |                              |                       |  |
| 0 (49.1%)  | .003                    | .150                         | 10.2                  |  |
| 1 (17.1%)  | .008                    | .173                         | 16.5                  |  |
| 2 (14.0%)  | .016                    | .184                         | 22.0                  |  |
| 3 (9.8%)   | .030                    | .197                         | 29.2                  |  |
| 4+ (10.6%)   | .083                    | .216                         | 41.9                  |  |

## **The Impact of Material Deprivation on Subjective Economic Stress**

We now consider the relationship between the different forms of deprivation and households' view of their own economic circumstances. The measure of subjective economic stress is based on the following question asked to the household reference person:

“Thinking now of your household’s total income, from all sources and from all household members, would you say that your household is able to make ends meet?” Respondents were offered six response categories ranging from “with great difficulty” to “very easily”. We treat this variable as a continuous one with scores ranging from ‘1’ corresponding to “very easily” to ‘6’ corresponding to great difficulty. (Using an ordered logit model shows the categories to be fairly equally spaced and produces similar conclusions to those we describe.)

In Table 7, this is taken as the dependent variable and various sets of explanatory variables are tested to see which contribute to explaining variation in subjective economic stress. Equation (i) simply includes the score on our consumption deprivation index: a regression coefficient of 3.6 on this index is estimated and it accounts for 38 per cent of the variance. Equation (ii) enters the two other deprivation dimensions, and shows a negative coefficient of about  $-0.2$  for both household facilities deprivation and neighbourhood deprivation. The relatively modest impact of these variables is reflected in the fact that taken together they produce only a marginal increase in the proportion of variance explained from 0.384 to 0.386. Finally, entering household income in equation (iii) produces a further increase in the  $R^2$  to 0.413. If instead we start with the other forms of deprivation and then add consumption deprivation to the equation, it increases variance explanation very substantially. Clearly consumption deprivation is the key factor influencing levels of subjective economic stress.

| <i>Table 7: Regression of Deprivation Dimensions on Subjective Economic Stress</i> |       |      |        |       |        |       |
|--|-------|------|--------|-------|--------|-------|
|  | (i)   |      | (ii)   |       | (iii)  |       |
|  | B     | S.E. | B      | S.E.  | B      | S.E.  |
| Consumption Deprivation  | 3.596 | .003 | 3.600  | 0.011 | 3.044  | 0.012 |
| Household Facilities Deprivation   |       |      | -0.176 | 0.025 | -0.593 | 0.025 |
| Neighbourhood Deprivation  |       |      | 0.203  | 0.008 | 0.244  | 0.008 |
| Log of Equivalent Income PPS   |       |      |        |       | -0.331 | 0.004 |
| Constant   | 3.035 |      | 23.003 |       | 6.180  |       |
| R <sup>2</sup>   | 0.384 |      | 0.386  |       | 0.413  |       |
| N  |       |      |        |       |        |       |
|  |       |      |        |       |        |       |

## Conclusions

This paper has used new data emerging from EU-SILC which allow patterns of deprivation in the enlarged EU to be analysed. With the indicators currently available in this source, it distinguishes three distinct dimensions of material deprivation relating to consumption deprivation, household facilities and neighbourhood environment. Reasonably reliable indices of these dimensions can be constructed at the EU and national levels - though reliability levels are low for the household facilities dimension in the more affluent countries where very few are deprived on the available items. In constructing the deprivation indices, each item is given a weight that reflects the proportion not deprived of it across all the full range European Union countries for which data is available (rather than the country in question).

Analysis of patterns of deprivation across countries, individually and grouped into welfare regimes, brings out the importance of taking the multidimensional nature of material deprivation into account. The contrast between countries and welfare regimes varies across the three dimensions, in a manner that produces rather different profiles. There was more cross-country variation in consumption deprivation than in the other two dimensions, with mean levels being lowest in the Social Democratic and Liberal regimes, slightly higher in the Corporatist one, higher again in the Southern European

countries, but very much higher in the Post-Communist countries. With the household facilities dimension the main differentiation was that the Post-Communist countries had much higher levels than the rest, while the extent of cross-country variation in neighbourhood environment was quite low.

The consumption deprivation index was seen to have a number of features that make it of particular interest. It is not only a highly reliable index in itself, it is also the dimension with by far the highest correlation with income. Furthermore, we saw that it allows us to identify segments of the population that are sharply differentiated in terms of their multi-dimensional profiles ranging across household facilities, neighbourhood environment, and housing deterioration. Finally, we showed that it is much more strongly related than the other dimensions to the subjectively-assessed degree of economic stress being experienced. Thus, it may come closest (with currently available indicators) to constituting a deprivation measure that could be employed together with low income to identify “consistent poverty” (Nolan and Whelan, 1996) or with low income and subjective economic stress to distinguish “core poverty” (Bradshaw and Finch, 2003) across the enlarged EU.

Finally, it is worth noting that a wider set of deprivation items than those currently included in EU-SILC would undoubtedly be valuable, allowing some elaboration of the dimensions and types of deprivation being distinguished. Analysis of data from the European Community Household Panel for the pre-enlargement EU, which contained some more items, suggested (Whelan *et al* 2001) that it would be useful to distinguish restrictions on consumption/social participation associated with short-term financial pressures from long-term capacity to consume, to capture both poor household quality *per se* and limited housing-related facilities, and to have positive as well as negative indicators of neighbourhood environment, such as access to services. This elaboration could be particularly important in the case of the New Member States, and can be explored with information from a special module on non-monetary deprivation to be included as part of EU-SILC in 2009.

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## References

- Aiginger, K. and Guger, A. (2006), 'The European Socioeconomic Model', in A. Giddens, Diamond, D. and R. Liddle, *Global Europe,, Social Europe*, Cambridge , Polity Press
- Alber, J., Fahey, T. and Saraceno, C. (2007), 'Introduction: EU Enlargement and Quality of Life: The Context and Purpose of the Book', in Alber, J., Fahey, T. and Saraceno, *Handbook of Quality of Life in the Enlarged European Union*, Oxon: Routledge
- Atkinson, A. B., Cantillon, B, Marlier, E. and Nolan, B. (2002), *Social Indicators: The European Union and Social Inclusion*, Oxford: Oxford University Press
- Acheson, D. (1998) *Independent Inquiry to Inequalities in Health*, The Stationery Office, United Kingdom for the Department of Health.
- Budoski, E. and Róbert, P. (2007), *Occupational Mobility in Europe*, Dublin: European Foundation for the Improvement of Living and Working Conditions.
- Boarini, R. and D'Ercole M.M. ( 2006). *Measures of Material Deprivation in OECD Countries*, Paris: OECD Social, Employment and Migration Working Papers, No. 37.
- Bradshaw. J. and Finch. N. (2003). "Overlaps in Dimensions of Poverty", *Journal of Social Policy*, Vol. 32, No. 4, pp. 513-525.
- Brandolini, A. (2007), 'Measurement of Income Distribution in Supranational entities: The Case of the European Union', in J. Micklewright and S. Jenkins (eds.), *Inequality and Poverty Re-examined*, Oxford: Oxford University Press.
- Bukodi, E. and Robert, P. (2007) *Occupational Mobility in Europe*, European Foundation for the Improvement of Living and Working Conditions, Luxembourg, Office for Official Publications of the European Communities.
- Department of Work and Pensions (2002). *Measuring Child Poverty: A Consultation Document*, Department of Work and Pensions: London.
- Department of Work and Pensions (2007). *Working for Children*, cm 7067, Stationery Office: London.
- Domanski, H. (2007), 'Housing Conditions' in Alber, J., Fahey, t. and Saraceno, C. *Handbook of Quality of Life in the Enlarged European Union*, London: Routledge.
- Fahey. T. (2007), 'The Case for an EU-wide measure of Poverty', *European Sociological Review*, 23,1, 35-47.

- Gallie, D., Paugam, S. and Jacobs, S. (2003), 'Unemployment, Poverty and Social Isolation', *European Societies* 5 (1): 1-31.
- Gordon, D., L., Adelman, K. Ashworth, J. Bradshaw, R. Levitas, S. Middleton, C. Pantazis, D. Patsios, S. Payne, Townsend, P. and Williams, J. (2000), *Poverty and Social Exclusion in Britain*, York: Joseph Rowntree Foundation.
- Hallerod, B. (1996). "The Truly Poor: Direct and Indirect Measurement of Consensual Poverty in Sweden", *European Journal of Social Policy*, Vol. 5, No. 2: 111-129.
- Guio, A.-C. (2005), Material Deprivation in the EU, *Statistic in Focus*, 21/2005.
- Guio, A.-C. and Maquet, E. (2007), 'Material Deprivation and Poor Housing', in *Comparative EU Statistics on Income and Living Conditions: Issues and Challenge*, EUROSTAT, Luxembourg: Office for Official Publications of the European Communities.
- Juhász, G. (2006), 'Exporting or Pulling Down? The European Social Model and Eastern Enlargement of the EU', *European Journal of Social Quality*, 6,1:82-107
- Kangas, O. and Ritakallio, V.-M. (1998) 'Different methods-different results? Approaches to multidimensional poverty', in H. J. Andreß (ed.), *Empirical Poverty Research in Comparative Perspective*, Aldershot: Ashgate.
- Kangas, O. and Ritakallio, V (2007), 'Relative to What? Cross National Pictures of European of European European Poverty Measured by Regional, National and European Standards', *European Societies*, 9,2:119-145
- Kelloway, E.K (1998), *Using Lisrel for Structural Equation Modelling: A Researchers Guide*
- Mack, J. and Lansley, S. (1985) *Poor Britain*, London: Georges Allen and Unwin.
- Mc Kay, S. and Collard, S. (2003) Developing Deprivation Questions for the Family Resources Survey, Department for Work and Pensions Working paper Number13. Corporate Document Series
- Muffels. R. and Fourage, D. (2004), 'The Role of European Welfare States in Explaining Resources Deprivation' *Social Indicators Research*, 68,3: 299-330.
- Nolan, B. and Whelan, C. T. (1996), *Resources, Deprivation and Poverty*, Oxford: Clarendon Press.
- Nolan, B. and Whelan, C.T (2007), 'On the Multidimensionality of Poverty and Social Exclusion' in Micklewright, J. and Jenkins, S. (eds.) *Poverty and Inequality: New Directions*, Oxford: Oxford University



- Perry, B. (2002) 'The Mismatch between Income Measures and Direct Outcome Measures of Poverty', *Social Policy Journal of New Zealand* 19: 101- 27.
- Ringen, S., 1988 "Direct and Indirect Measures of Poverty", *Journal of Social Policy*, 17, pp. 351-366
- Sen, A. (2000) *Social exclusion, concept, application and scrutiny*, Manila, Asian Development Bank. Social Development Papers No. 1 Office of Environment and Social Development, Asian Development Bank.
- Short, K. S. (2005) 'Material and Financial Hardship and Income-based Poverty Measures in the USA', *Journal of Social Policy* 34 (1): 21- 38.
- Townsend, P. (1979), *Poverty in the United Kingdom* Penguin, Harmondsworth.
- Tsakloglou, P. and Papadopoulos, F. (2002) 'Aggregate level and determining factors of social exclusion in twelve European countries', *Journal of European Social Policy* 12 (3): 211- 25.
- Whelan, C. T., Layte, R., Maître, B. and Nolan, B. (2001) 'Income, Deprivation and Economic Strain: An Analysis of the European Community Household Panel', *European Sociological Review* 17 (4): 357-37.
- Whelan, C. T., Layte, R. and Maître, B. (2004) 'Understanding the mismatch between income poverty and deprivation: A dynamic comparative analysis', *European Sociological Review* 20 (4): 287-30.
- Whelan, C. T. (2007), 'Understanding the Implications of Choice of Deprivation Index for Measuring Consistent Poverty in Ireland', *Economic and Social Review*, 38, 2, 211-234

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